THE RELATIONSHIPS OF STUDENT RATINGS OF INSTRUCTION TO STUDENT, INSTRUCTOR AND COURSE CHARACTERISTICS

Edward L. Delaney, Jr.

New York University

Paper presented at the American Educational Research Association Annual Meeting, San Francisco, April 21, 1976.

It is a relatively new idea in higher education that students be part of the process in evaluating the effectiveness and professional role performmace of college and university faculty members as classroom instructors. Although no one has ever doubted that students have opinions about the quality of instruction they receive, it is only within the past few decades that attempts have been made to systematically gather these judgments. Numerous authors (Bornheimer, Burns, & Dumke, 1973; Keast & Macy, 1973; and Miller, 1972) have argued for the inclusion of student input into the processes of faculty evaluation and personnel decisions. Others (Centra, 1972; Costin, Greenough, & Menges, 1971; Menges, 1973) have argued that ratings can provide a valuable resource and incentive for instructors to improve their teaching effectiveness. As a consequence, there has been a sharp increase in efforts to utilize student ratings of instruction in many colleges and universities for a variety of purposes.

However, because any evaluation of an instructor is an implied comparison with other instructors whom the student rater has experienced, a direct quantitative comparison among instructors would seem to be valid only if those being evaluated are from a similar or homogeneous population of faculty members. Thus, comparative results among various types of instructors would seem necessary in order to interpret more adequately the empirical meaning of the ratings. However, such an interpretation involves the additional difficulty of ascertaining the extent to which student ratings independently describe teaching proficiency, and the extent to which they are related to certain attributes of the student rater, other dimensions of the course, and/or aspects of the faculty member's role apart from those directly rated by the student.

This study sought to contribute to this research by examining the relationship between various student, instructor, and course characteristics, and

student ratings of instruction. Although there have been numerous studies of the correlates of student ratings of instruction, comparatively few efforts have specifically focused on the impact of the combined association of these various characteristics on the ratings.

Because student ratings are increasingly available, correlational studies testing these possible relationships tend sometimes to find statistically significant differences, due primarily perhaps to the rather large sample sizes tested. Little has been done to describe the practical importance of such findings in applying student ratings to the variety of purposes for which they are commonly used. Moreover, caution must also be taken in making causal inferences between various background characteristics and ratings. This investigation sought to contribute some perspective to these issues.

Related Literature

Student Characteristics

There is considerable research reported in the literature which has attempted to test the possible relationships between student ratings and various background and course-related characteristics of the student raters, such as their sex, major, year in college, motivation for taking the course, expected grade and actual grade in the course, etc. After an extensive review of studies testing these variables, Kulik and McKeachie (1975) concluded that correlations between ratings and such variables are seldom high, even when they are significant. Rayder's (1968) multiple regression study of 4,285 students' ratings of 87 instructors at Colorado State College found that, when the student characteristics of age, sex, grade level, and major were used collectively to predict ratings, less than two percent of the variance in ratings were predicted. A more recent study of 1,200 courses (Rosenshine, Cohen & Furst, 1973) similarly found no relationship of practical significance between student ratings and the student variables of age, sex, grade point average, marital status, year in school, and

number of previous courses in the field. Nonetheless, these investigations did find a weak tendency for students expecting higher grades to give higher ratings.

A number of other studies found no relationship between the ratings of individual students and their expected or actual grades in a course (Bendig, 1953; Eckert, 1950; Garverick & Carter, 1962; Guthrie, 1949; Heilman & Armentrout, 1936; Hudelson, 1951; Remmers, 1960; Voeks & French, 1960). In contrast, a substantial number of investigators have found significant, positive relationships between students' grades and their ratings of instructors and courses (Caffrey, 1969; Elliott, 1950; Rayder, 1968; Russell & Bendig, 1953; Stewart & Malpass, 1966). However, these relationships were typically weak ($r < .30$).

Instructor Characteristics

Numerous investigators have correlated specific teacher characteristics with student ratings. Costin, Greenough, and Menges (1971) have reviewed research on teaching experience and student ratings, and concluded that the results are fairly consistent. Several studies (Centra, 1976; Clark & Keller, 1954; Downie, 1952; Guthrie, 1949; Walker, 1969) found that student ratings tended to improve with the experience of the instructor.

With regard to a closely related variable, that of rank, Gage (1961) found that associate professors and full professors received significantly higher ratings than did instructors or assistant professors. At the Colorado State College, Heilman and Armentrout (1936) found no significant relationship between the years of teaching experience of 46 teachers and their ratings ($n=2,215$) received from students; while Rayder (1968), at the same institution some 30 years later, found negative correlations between student ratings ($n=4,285$) and the teaching experience of 87 instructors. Similarly, at Brooklyn College, Riley, Ryan, and Lifshitz (1950) found a predominately negative relationship between academic rank and student ratings. While the overall relationship between

student ratings and teaching experience and rank is probably positive, the size and direction of the relationship may vary somewhat at different types of institutions.

Other instructor characteristics, such as age and sex, seem little related to student ratings (Costin, Greenough & Menges, 1971; Downie, 1952; Elliott, 1950; Heilman & Armentrout, 1936; McKeachie, 1973). However, Rayder (1968) found that multiple regression equations, including such instructor characteristics as sex, age, rank, degree and department, predicted mean student ratings with greater success than equations based on student characteristics. Equations with instructor characteristics predicted between 15% and 27% of the variance in mean student ratings while equations with student characteristics predicted less than 2% of the variance.

Course Characteristics

In addition to the characteristics of the instructor, the conditions under which he teaches may make a difference in the ratings received from students. One such variable, that of class size or the number of students enrolled in the course, has been shown to be negatively related to student ratings in several studies (Centra, 1976; Heilman & Armentrout, 1936; Lovell & Haner, 1955; McDaniel & Feldhusen, 1970). However, a few investigators (Goodhartz, 1948; Guthrie, 1954; Jiobu & Pollis, 1971) failed to find a relationship between ratings and class enrollment. Gage (1961) reported a curvilinear relationship in which courses with enrollments of 30 to 39 undergraduates at the University of Illinois received lower ratings than did courses with either more or fewer students. However, further research is needed to substantiate the extent of this relationship.

Little research has been reported which has tested the contribution to rating differences of department and subject areas of the course. Based on a multiple regression study, Rayder (1968) concluded that art courses may receive higher ratings than courses in mathematics. However, Cohen and Humphreys (1960)

found that psychology majors tended to rate psychology courses and instructors about the same as non-psychology majors, although students required to take a psychology course tended to rate it lower than did students who selected the course as an elective. Thus, apart from the enrollment size of the course which still remains an area of some controversy, there is little consensus in the available research to demonstrate that characteristics of the course have any demonstrated influence on the ratings given by students.

Method

Sample

Student rating data were collected from undergraduates in liberal arts and professional education courses toward the end of each of the four semesters of the 1973-74 and 1974-75 academic years in six colleges of a large urban university. Mainly introductory courses distributed widely across the humanities and physical, social, and behavioral sciences, all the classes included students from a number of departments and usually from more than one school or college of the university.

Instrumentation

The rating instrument used in this study was the Student Instructional Report (SIR), a 39-item standardized rating form developed by Centra (1973). Factor analysis of the SIR produced six dimensions: Teacher-Student Relationships, Course Objectives and Organization, Quality of Lectures, Quality of Reading Assignments, Course Difficulty/Workload, and Examinations (Centra, 1973). Because they include the most items and contain the two overall summary rating items, this study used only the first two dimensions as dependent variables: (1) Teacher-Student Relationship measures the degree to which an instructor is open to student viewpoints, is concerned about their learning, etc. (8 items); and (2) Course Objectives and Organization assesses how well the instructor has organized the

course and has achieved his objectives, (7 items). Seven descriptive items on the SIR assessed relevant student characteristics and course related data such as the student's sex, class level, expected grade for the course, motivation for taking the course etc. In addition a coversheet completed by the course instructor at the time that the course was rated by students, provided additional data regarding instructor and course-related characteristics which enabled the individual student rating sheets to be aggregated into course units. More specifically, it contained several questions about the instructor such as his rank, teaching load, years of teaching experience, and course-related characteristics (e.g., class enrollment for the course, subject area of the course, general format in which the class was conducted, etc.).

Centra (1973) reported two tests of reliability for the SIR evaluation form, both of which suggest sufficient stability of the ratings derived from this instrument. In addition, several validity studies of data generated by the SIR have been reported (Centra, 1973; Centra & Creech, 1976).

Procedures

Correlational analyses were used to examine some commonly held ideas about influences on student ratings, and zero-order correlations were measured with Pearson product moment correlation coefficients. This preliminary analysis served to shed light on variables which seemed to be most associated with the ratings. These independent variables were initially suggested from the review of the literature reported above. Variables on the SIR evaluation form and coversheet which were continuous and consequently appropriate for correlational analyses were correlated with the two dependent variables. The only exception to this was the variable of course subject, which first had to be clustered into fields of similar major content and each of these made dichotomous.

The second technique used in analyses of these data was multiple regression which made it possible to assess the relationship between multiple independent

instructor at the time that the course was rated by students, provided additional data regarding instructor and course-related characteristics which enabled the individual student rating sheets to be aggregated into course units. More specifically, it contained several questions about the instructor such as his rank, teaching load, years of teaching experience, and course-related characteristics (e.g., class enrollment for the course, subject area of the course, general format in which the class was conducted, etc.).

Centra (1973) reported two tests of reliability for the SIR evaluation form, both of which suggest sufficient stability of the ratings derived from this instrument. In addition, several validity studies of data generated by the SIR have been reported (Centra, 1973; Centra & Creech, 1976).

Procedures

Correlational analyses were used to examine some commonly held ideas about influences on student ratings, and zero-order correlations were measured with Pearson product moment correlation coefficients. This preliminary analysis served to shed light on variables which seemed to be most associated with the ratings. These independent variables were initially suggested from the review of the literature reported above. Variables on the SIR evaluation form and coversheet which were continuous and consequently appropriate for correlational analyses were correlated with the two dependent variables. The only exception to this was the variable of course subject, which first had to be clustered into fields of similar major content and each of these made dichotomous.

The second technique used in analyses of these data was multiple regression which made it possible to assess the relationship between multiple independent

variables of major interest and each of the dependent variables, student rating factor scale scores, as well as to determine the amount of variance accounted for by all of the independent variables combined. Two levels of analysis were employed, the individual student rating scores and course mean scores, necessitating the generation of two distinct data sets. The former linked the instructor and course measures onto each individual student record, and the latter used the course mean scores for the student's expected grade ratings and other student measures. Thus, 41560 individual cases and 3558 course records were usable units.

Data Analysis

Tables 1 and 2 present matrices of correlation coefficients for those variables found to be significantly associated with either of the two rating factor scales for both individual rating scores and course mean scores. Examination of these matrices revealed that the correlations between the background characteristics and the rating variables tended to be somewhat higher when derived from course mean data than were those based on individual student ratings. Moreover, the inter-correlations between the independent variables themselves tended to remain constant or even slightly decrease.

Among the variables whose correlation coefficients with both SIR factors were nonsignificant and/or very low were the following: student cumulative grade-point average, class level, student's sex, and recency of the instructor's revision in teaching methods. Among those variables which were related to ratings, only instructor's rank and years of teaching experience were highly intercorrelated (r=.71). Because the literature has frequently reported correlates between ratings and both these variables, they were both included in the regression equations.

Multiple regression analyses on both the individual student rating scores and the course mean scores were performed separately for each of the two SIR factor scales, (1) Teacher-Student Relationship and (2) Course Objectives and Organization, on the following continuous variables entered simultaneously: student expected

grade, instructor's rank, teaching experience, teaching course load, class enrollment size, and the course's subject area.

Findings and Discussion

Tables 3 and 4 present the findings of multiple regressions of the individual student rating scores. The multiple correlation squared (R^2) derived for both analyses indicates the proportion or percentage of variation in the dependent variable which can be explained by the independent variables taken collectively (Blalock, 1960, p.346). Consequently, these findings suggest that this combination of independent variables account for only 6.7% and 4% of the variance in the ratings for each of the two SIR factor scales respectively.

In attempting to assess the relative combination of several student, instructor and course measures with the variation in the rating scores, examination of the individual beta weights (β) were particularly enlightening. Table 3 shows that when comparing in standardized units, student expected grade accounted for by far the largest proportion of variation in the ratings of Teacher-Student Relationship among the independent variables under consideration. Similarly, Table 4 indicates that student expected grade also accounted for the largest proportion of variance in the ratings of Course Objectives and Organization. The beta weight was greatest for student expected grade, while the next highest weights were biology, psychology & health science course subject and instructor's teaching experience.

However, while expected grade had by far the greatest predictive value of all of the independent variables considered, the size of this value was relatively small. Moreover, the findings seem to suggest that class size and rank were predictive of somewhat lower ratings of Teacher-Student Relationship, whereas greater teaching experience was predictive of slightly higher ratings of both Teacher-Student Relationship and Course Objectives and Organization.

Comparable regression analyses using only course mean scores of the two

SIR factor scales, as well as class mean expected grade, are reported in Tables 5 and 6. These findings indicate that the multiple correlation squared ($\underline{R}^2$) for both SIR factors increases somewhat over those yielded from the individual student rating scores reported above in Tables 3 and 4. Thus, the amount of variance accounted for by the combination of these independent variables appears to be somewhat exacerbated when the course mean ratings were taken as the unit of analysis.

The beta weights of the mean expected grade and other instructor and course variables did not seem to be substantially effected by the shift in the level of analysis. However, it is noteworthy to observe that the beta weights for the more codified fields, such as biology, psychology, health science, mathematics, physical science and business, seemed to increase in negative values, predicting lower ratings, especially on the Teacher-Student Relationship factor scale. This is consistent with an interpretation made by Wilson et al. (1975) whose findings suggested that the more codified the knowledge of a field, the more likely professors were to adopt a tightly focused and structured teaching style. These professors tended to involve students less in the conduct of the class, and their classes provided less opportunity for students to participate in the structure of the course content. These findings also argue for the use of course subject normative data when comparisons are attempted across academic units.

In addition, it is also curious to observe that although rank and teaching experience were highly inter-correlated, instructor's rank was again predictive of slightly lower ratings, especially on Teacher-Student Relationship, while teaching experience seemed to predict somewhat higher ratings, most especially on Course Objectives and Organization. This may suggest that junior faculty members may be more inclined toward student-centered teaching practices than their senior colleagues, but that course planning and organization tends to improve somewhat with an increase in teaching experience.

In conclusion, these findings seem to suggest that students' expected grade

in a course does account for the largest amount of variance in student ratings when compared with the relative impact of a variety of other instructor and course related variables. However, even when combined, these variables were found to account for comparatively little variability in student ratings. Consequently, the biases contributed by such factors seemed to be quite small and did not seem likely to greatly effect the ratings. These findings are encourageing because they support the validity of student ratings as measures of instructor performance.

Nonetheless, future research efforts should investigate further the apparent exacerbated relationships between student ratings and various instructor and course variables when class mean scores are used as the unit of analysis. Furthermore, these findings suggest that more theoretically-based research on the meaning of students' expected grade and its association with their ratings of instruction is required before definitive statements can be made about the validity of student ratings of instruction, until now only partially addressed in the literature.

References

Bendig, A. W. The relation of level of course achievement to students' instructor and course ratings in introductory psychology. Educational and Psychological Measurement, 1953, 13, 437-448.

Blalock, H. M. Social Statistics. New York: McGraw-Hill, 1960.

Bornheimer, D. G., Burns, G. P., & Dumke, G. S. The faculty in higher education. Illinois: The Interstate Printers and Publishers, 1973.

Caffrey, B. Lack of bias in student evaluations of teachers. Proceedings of the 77th Annual Convention of the American Psychological Association, 1969, 4, 641-642.

Centra, J. A. The student instructional report: comparisons with alumni ratings, item reliabilities, and factor structure. SIR Report #3. Princeton, New Jersey: Educational Testing Service, 1973.

Centra, J. A. The student instructional report: its development and uses. SIR Report #1. Princeton, New Jersey: Educational Testing Service, 1973.

Centra, J. A., & Creech, F. R. The relationship between student, teacher, and course characteristics and student ratings of teacher effectiveness. Princeton, New Jersey: Educational Testing Service, 1976.

Clark, K. E., & Keller, R. J. Student ratings of college teaching. In R. A. Eckert (Ed.), A university looks at its program. Minneapolis: University of Minnesota Press, 1954.

Cohen, J., & Humphreys, L. G. Memorandum to faculty. University of Illinois, Department of Psychology, 1960. (mimeographed)

Costin, F., Greenough, W. T., & Menges, R. J. Student ratings of college teaching: reliability, validity, and usefulness. Review of Educational Research, 1971, 41, 511-535.

Downie, N. W. Student evaluation of faculty. Journal of Higher Education, 1952, 23, 495-496, 503.

Eckert, R. E. Ways of evaluating college teaching. School and Society, 1950, 71, 65-69.

Elliott, D. H. Characteristics and relationships of various criteria of colleges and university teaching. Purdue University Studies in Higher Education, 1950, 70, 5-61.

Gage, N. L. The appraisal of college teaching: an analysis of ends and means. Journal of Higher Education, 1961, 32, 17-22.

Garverick, C. S., & Carter, H. D. Instructor ratings and expected grades. California Journal of Educational Research, 1962, 13, 218-221.

Goodhartz, A. S. Student attitudes and opinions relating to teaching at brooklyn college. School and Society, 1948, 68, 345-349.

Guthrie, E. R. The evaluation of teaching. Educational Record, 1949, 30, 109-115.

Heilman, J. D., & Armentrout, W. D. The rating of college teachers on ten traits by their students. Journal of Educational Psychology, 1936, 27, 197-216.

Hudelson, E. The validity of student rating of instructors. School and Society, 1951, 73, 265-266.

Jiobu, R. M., & Pollis, C. A. Student evaluations of courses and instructors. The American Sociological, 1971, 6, 317-321.

Keast, W. R., & Macy, J. W. Faculty tenure. San Francisco: Jossey-Bass, 1973.

Kulik, J. A., & McKeachie, W. J. The evaluation of teachers in higher education. In F. N. Kerlinger (Ed.). Review of Research in Education, Illinois: American Educational Research Association, 1975, 3, 210-240.

Lovell, G. D., & Haner, C. F. Forced-choice applied to college faculty rating. Educational and Psychological Measurement, 1955, 15, 291-304.

McDaniel, E. D., & Feldhusen, J. F. Relationships between faculty ratings and indexes of service and scholarship. Proceedings of the 78th Annual Convention of the American Psychological Association, 1970, 5, 619-620.

McKeachie, W. J. Correlates of student ratings. In A. L. Sockloff (Ed.). Proceedings: faculty effectiveness as evaluated by students. Philadelphia: Measurement and Research Center, Temple University, 1973.

Menges, R. J. The new reporters: students rate instruction. In C. R. Pace (Ed.). New directions for higher education: evaluating learning and teaching. San Francisco: Jossey-Bass, 1973.

Miller, R. I. Evaluating faculty performance. San Francisco: Jossey-Bass, 1972.

Rayder, N. F. College student ratings of instructors. Journal of Experimental Education, 1968, 37, 76-81.

Remmers, H. H. Manual of instructions for the purdue rating scale for instructors (Rev. Ed.). West Lafayette, Indiana: University Book Store, 1960.

Riley, J. W., Ryan, B. F., & Lifshitz, M. The student looks at his teacher. New Brunswick, New Jersey: Rutgers University Press, 1950.

Rosenshine, B., Cohen, A., & Furst, N. Correlates of student preference ratings. Journal of Economic Education, 1973, 4, 90-99.

Russell, H. E., & Bendig, A. W. Investigation of the relations of student ratings of psychology instructors to their course achievement when academic aptitude is controlled. Educational and Psychological Measurement, 1953, 13, 626-235.

Stewart, C. T., & Malpass, L. F. Estimates of achievement and ratings of instructors. Journal of Educational Research, 1966, 59, 347-350.

Voeks, V. W., & French, G. M. Are student-ratings of teachers affected by grades? Journal of Higher Education, 1960, 31, 330-334.

Walker, B. D. An investigation of selected variables relative to the manner in which a population of junior college students evaluate their teachers. Dissertation Abstracts, 1969, 29, 3474.

Wilson, R. C., et al. College professors and their impact on students. New York: Wiley, 1975.

Table 1

Matrix of Correlation Coefficients: All Variables of Individual Data

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1 Student Expected Grade											
2 Instructor Faculty Rank	-.028***										
3 Instructor Teaching Experience	-.006	.713***									
4 Instructor Teaching Load	-.013*	.097***	.163***								
5 Class Enrollment	-.010	-.017***	-.009	.001							
Course Subject:											
6 Arts and Languages	-.007	.181***	.182***	.241***	-.095***						
7 Business	-.029***	.036***	-.064***	-.033***	-.069***	-.188***					
8 Humanities	.015**	-.171***	.050***	.042***	-.035***	-.203***	-.151***				
9 Math. & Phys. Science	.047***	-.011*	-.129***	-.142***	-.025***	-.263***	-.196***	-.211***			
10 Biology, Psych., Health	-.013*	-.019***	.035***	.036***	.112***	-.162***	-.121***	-.130***	-.169***		
11 Social Science, Education	-.032***	-.054***	-.088***	-.016**	.143***	-.224***	-.167***	-.180***	-.233***	-.143***	
12 SIR Factor I[a]	-.220***	-.043***	-.001	.037	-.069***	.045***	.001	.037***	-.063***	-.063***	.030***
13 SIR Factor II[b]	-.184***	.014**	.039***	.016**	-.020***	.033***	-.012*	.029***	-.027***	-.043***	.004

[a] SIR Factor I: Teacher-Student Relationship

[b] SIR Factor II: Course Objectives and Organization

*$p < .05$

**$p < .01$

***$p < .001$

Table 2

Matrix of Correlation Coefficients: All Variables of Course Data

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1 Mean Expected Grade											
2 Instructor Faculty Rank	.104***										
3 Instructor Teaching Experience	.063***	.714***									
4 Instructor Teaching Load	.004	.169***	.159***								
5 Class Enrollment	.022	.046*	.029	-.006							
Course Subject:											
6 Arts and Languages	.052**	-.019	.033	.155***	-.037*						
7 Business	.134***	.082***	-.072***	-.078***	-.026	-.017***					
8 Humanities	-.127***	-.061***	.046**	.090***	.009	.197***	-.165***				
9 Math. & Phys. Science	-.076***	-.029	-.006	-.140***	.024	-.195***	.163***	-.183***			
10 Biology, Psych., Health	.022	-.059**	-.018	-.008	.057***	-.166***	-.139***	-.157***	-.155***		
11 Social Science, Education	.030	.058**	-.017	-.027	.007	-.220***	.184***	-.208***	-.206***	-.176***	
12 Course Mean SIR Factor I[a]	.190***	-.039*	.027	.106***	-.104***	.211***	-.053**	.036*	-.168***	.121***	.051**
13 Course Mean SIR Factor II[b]	.178***	.046**	.095***	.047**	-.010**	.158***	.033*	.018	-.141***	-.060***	.011

[a] Course Mean SIR Factor I: Teacher-Student Relationship

[b] Course Mean SIR Factor II: Course Objectives and Organization

*$p < .05$

**$p < .01$

***$p < .001$

TABLE 3

Simultaneous Multiple Regression Results for the Dependent Variable

SIR Factor I: Teacher-Student Relationship

(n = 41560)

Variable	Regression Coefficient	Std. Error of Coefficient	Beta Weight	t-test	Unique Variance[a]
Student Expected Grade	0.1879	0.004	0.221	45.50***	.048
Instructor's Faculty Rank	-0.0420	0.003	-0.093	-12.71***	.004
Instructor's Years of Teaching Experience	0.0225	0.003	0.052	7.07***	.001
Instructor's Teaching Load	0.0158	0.003	0.027	5.24***	.001
Class Enrollment	-0.0004	0.000	-0.067	-13.62***	.004
Course Subject:					
Arts and Languages	0.0081	0.014	0.005	0.58	.000
Business	-0.0412	0.015	-0.022	-2.79**	.000
Humanities	-0.0102	0.015	-0.006	-0.70	.000
Mathematics and Physical Science	-0.0887	0.014	-0.060	-6.54***	.001
Biology, Psychology, Health Science	-0.1547	0.015	-0.075	-10.03***	.002
Social Science and Education	0.0067	0.014	0.004	0.48	.000
Multiple Correlation Squared (R^2) = .067		(F = 259.06***)			

[a] Unique variance is identical to the increase in R^2 if each variable were entered last, after all other independent variables.

* $p < .05$
** $p < .01$
*** $p < .001$

TABLE 4

Simultaneous Multiple Regression Results for the Dependent Variable

SIR Factor II: Course Objectives and Organization

(n = 41560)

Variable	Regression Coefficient	Std. Error of Coefficient	Beta Weight	t-test	Unique Variance[a]
Student Expected Grade	0.1521	0.004	0.186	37.74***	.001
Instructor's Faculty Rank	-0.0138	0.003	-0.032	-4.29***	.000
Instructor's Years of Teaching Experience	0.0228	0.003	0.055	7.35***	.001
Instructor's Teaching Load	0.0041	0.003	0.006	1.06	.000
Class Enrollment	-0.0001	0.000	-0.016	-3.23**	.000
Course Subject:					
Arts and Languages	-0.0068	0.014	-0.005	-0.49	.000
Business	-0.0556	0.014	-0.031	-3.87***	.000
Humanities	-0.0019	0.014	-0.001	-0.13	.000
Mathematics and Physical Science	-0.0473	0.013	-0.034	-3.57***	.000
Biology, Psychology, Health Science	-0.1177	0.015	-0.059	-7.82***	.001
Social Science and Education	-0.0303	0.014	-0.019	-2.20*	.000
Multiple Correlation Squared (R^2) = .040		(F = 150.71***)			

[a] Unique variance is identical to the increase in R^2 if each variable were entered last, after all other independent variables.

*$p < .05$

**$p < .01$

***$p < .001$

TABLE 5

Simultaneous Multiple Regression Results for the Dependent Variable

Course Mean SIR Factor I: Teacher-Student Relationship

(n = 3558)

Variable	Regression Coefficient	Std. Error of Coefficient	Beta Weight	t-test	Unique Variance[a]
Mean Expected Grade	0.1353	0.011	0.196	12.22***	.037
Instructor's Faculty Rank	-3.3874	0.590	-0.134	-5.74***	.008
Instructor's Years of Teaching Experience	2.3154	0.593	0.090	3.90***	.004
Instructor's Teaching Load	2.0691	0.520	0.065	3.98***	.004
Class Enrollment	-0.0401	0.007	-0.091	-5.80***	.008
Course Subject:					
Arts and Languages	11.3588	2.259	0.126	5.03***	.006
Business	-7.4011	2.407	-0.073	-3.08**	.002
Humanities	1.2347	2.297	0.013	0.54	.000
Mathematics and Physical Science	-13.7569	2.297	-0.146	-5.99***	.009
Biology, Psychology, Health Science	-13.9172	2.424	-0.131	-5.74***	.008
Social Science and Education	1.8376	2.220	0.021	0.83	.000

Multiple Correlation Squared (R^2) = .134 (F = 49.53***)

[a] Unique variance is identical to the increase in R^2 if each variable were entered last, after all other independent variables.

* p .05

** p .01

*** p .001

TABLE 6

Simultaneous Multiple Regression Results for the Dependent Variable

Course Mean SIR Factor II: Course Objectives and Organization

(n = 3558)

Variable	Regression Coefficient	Std. Error of Coefficient	Beta Weight	t-test	Unique Variance[a]
Mean Expected Grade	0.1153	0.011	0.173	10.45***	.028
Instructor's Faculty Rank	-1.2451	0.588	-0.051	-2.12*	.001
Instructor's Years of Teaching Experience	2.7344	0.591	0.110	4.62***	.006
Instructor's Teaching Load	-0.0520	0.518	-0.002	-0.10	.000
Class Enrollment	-0.0020	0.007	-0.005	-0.29	.000
Course Subject:					
Arts and Languages	6.0588	2.252	0.070	2.69**	.002
Business	-8.2041	2.399	-0.083	-3.42***	.003
Humanities	-1.9061	2.290	-0.021	-0.83	.000
Mathematics and Physical Science	-14.3019	2.290	-0.157	-6.25***	.010
Biology, Psychology, Health Science	-10.2111	2.416	-0.100	-4.23***	.005
Social Science and Education	-3.6251	2.213	-0.043	-1.64	.001
Multiple Correlation Squared (R^2) = .080		(F = 27.82***)			

[a] Unique variance is identical to the increase in R^2 if each variable were entered last, after all other independent variables.

*$p < .05$

**$p < .01$

***$p < .001$